



This key and tag, carrying the engine number, together are called a "token"—a token of complete protection.



**A SUPERHUMAN
HAND PROTECTS
THIS TRAIN**

The Best of Everything in the Best of the West



AS our trains speed through the West, a giant hand protects them.

Superhuman in ability, this invisible guardian never sleeps, is not affected by snow, sleet or fog, and in case of danger this giant hand will immediately apply the air brakes and stop the train. It is called the G. R. S. Automatic Two Speed Train Control. This system at present operates between the Missouri and Mississippi rivers and is being rapidly extended to Chicago.

Perhaps your curiosity is aroused by the mystery of this remarkable system or the complete protection it offers and its aid in keeping the train on schedule time, espe-

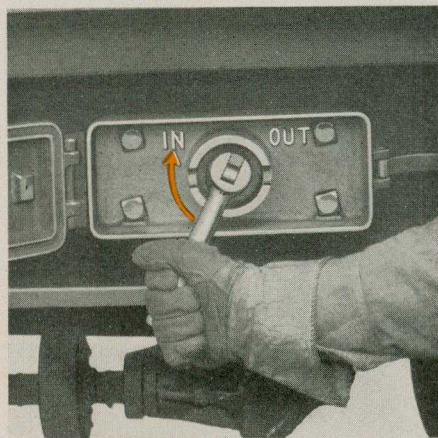


Fig. 1. Fireman "cuts-in" train control transmission before leaving round-house.

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cially in bad weather, or in the fact that it allows the train to run safely at the established maximum speed according to conditions ahead.

In order that you may understand this automatic train control system, perhaps the following paragraphs convey an idea as to what this system accomplishes.

As each locomotive leaves the roundhouse, the train control transmission is "cut in" to service position as shown in

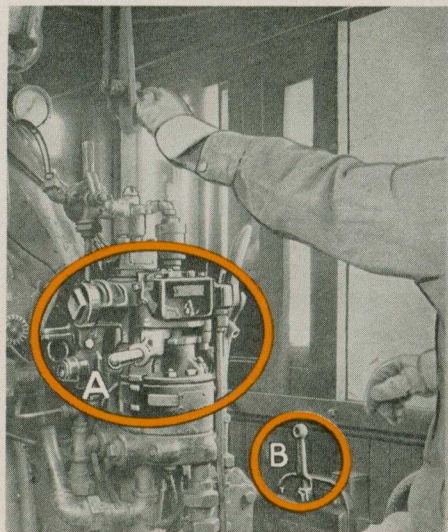


Fig. 2. A—Connection on automatic brake valve.
B—Acknowledging lever.

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Fig. 3
"Token" used to lock
train control in service
and carried by con-
ductor.

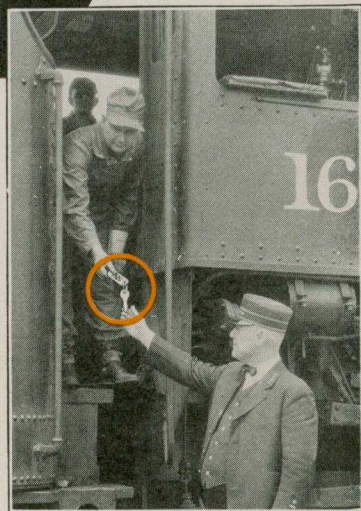


Fig. 4
Engineer handing the
"token" to conductor
after locking train con-
trol in service.

Figure 1 and then the device is thoroughly tested.

Just before the train starts on its journey the engineer locks the train control system into the operating position by means of a Yale key to which is attached a tag bearing the engine number as shown in Figure 3. This is known as a "token" and key can only be removed when device is in locked position for full operation. The engineer must remove this key and present it to the train conductor, as shown in Figure 4, and until the conductor has received the "token," he cannot proceed with the train. The engineer and conductor, therefore, are held jointly responsible for the operation under this train control system. If you care to see the "token" ask the conductor to show it to you.

Located on the front of the locomotive about six inches above each rail are two small devices as shown in Figure 5, which are sensitive to the flow of the alternating electric current in the track rails. The inductive influence produced is carried back to the heart of the system contained in a large box on top of the locomotive tender, as shown in Figure 6, where it is amplified to sufficient strength to control the mechanism which automatically applies the brakes when occasion requires.

One other device also contained in the box shown in Figure 6 is a governor oper-

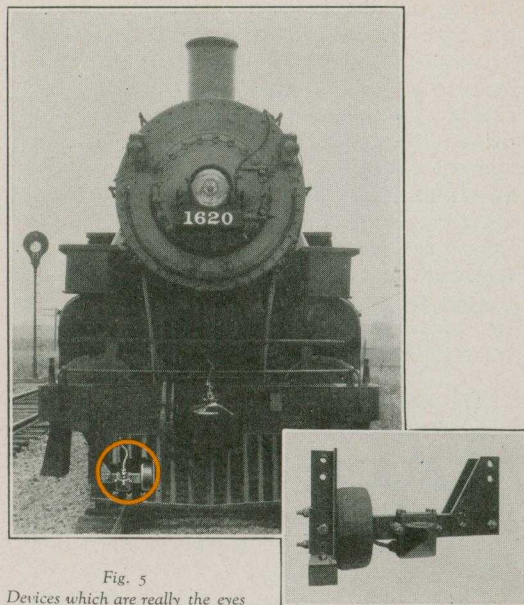


Fig. 5
Devices which are really the eyes
of the invisible guardian.

ated by one of the axles of the tender. This governor determines the speeds at which the trains can run, according to whether an influence is being received from the track rails or not.

When the track ahead is clear for at least the full distance required to stop the train by means of the air brakes, there is an alternating electric current flowing down one rail and back in the other rail. If another train should be approached too

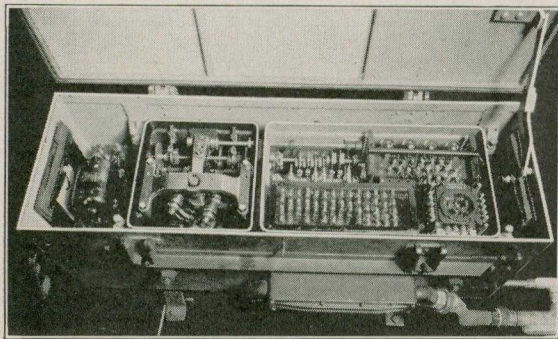
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closely the electric current will cease. If the train should be running at a speed between 20 and 70 miles per hour and this electric current in the rails ceases, indicating the presence of another train, or other restriction ahead, then the train control device on the locomotive sounds an alarm in the cab and applies the brakes automatically, thus stopping the train unless the engineer is fully aware of the situation and takes immediate action by pulling the acknowledging lever as shown in Figure 2 and also reduces the speed of his train to less than 20 miles per hour.

The system will allow the engineer to operate his passenger train no faster than 70 miles an hour and freight trains 50 miles per hour at any time if the track ahead is clear. Should he approach too closely to a

Fig. 6

The heart of the invisible guardian.



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train or other restricted condition ahead or if another train approaches too close to this train, this *invisible guardian* — the automatic train control system — will change a light in the cab of the approaching train from green to yellow and cause a chime and a shrill whistle to sound. Immediately the engineer must acknowledge this condition and reduce his speed below 20 miles an hour, otherwise his brakes will be automatically applied and his train stopped. The chime continues to sound until the speed of the train is sufficiently reduced.

When running below 20 miles an hour in a restricted zone, the engineer must acknowledge this condition to the *invisible guardian* every half mile by pulling the acknowledging lever, otherwise the train will be stopped. When once stopped, he can release the brakes of his train and proceed under the restrictions imposed by the system at that particular time.

As soon as the track ahead becomes clear, the train control system will change the light in the cab from yellow to green and cause a bell to sound which informs the engineer that he can resume full speed ahead up to 70 miles an hour.

You can readily see how valuable this system is.

This highly perfected system for your protection is the result of over twenty years of extensive research development on

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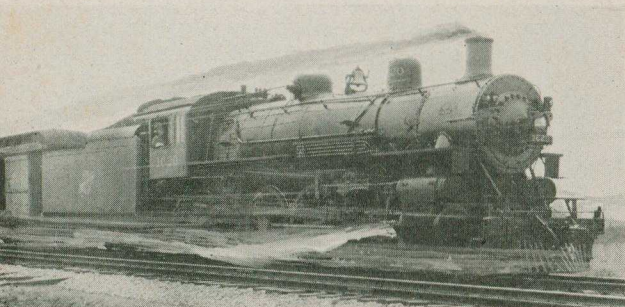
automatic train control carried on by the General Railway Signal Company of Rochester, N. Y.

Automatic train control, not only protects you in the worse kinds of weather, but materially aids in bringing your train through on schedule time.

It is also of benefit to shippers in bad weather, especially those of perishable goods as much delay is avoided by allowing the engineer to run at the maximum speed according to track conditions ahead.

Although the system is costing the Chicago & North Western Railway three million dollars not a penny has been added to your railroad fare nor to the cost of freight shipments.

It is another indication of Chicago & North Western's policy to provide its patrons with "The Best of Everything in the Best of the West."



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PASSENGER TERMINAL, CHICAGO